

and Kohala, had only from 5 to 50 per cent of the normal rainfall; southeast and southwest exposures on the same island had from 200 to 400 per cent of normal; the same excess occurred on Kauai Island, and the same abnormal distribution on Maui Island. Extremes of precipitation, 0.07 at Niulii, north Kohala, and 28.75 at Wahiaw, Mount Kauai. There was an unusual excess of southerly airs and lack of trade wind, which accounts for the abnormal distribution of rainfall.

Meteorological Observations at Honolulu, May, 1901.

The station is at 21° 18' N., 157° 50' W.
Hawaiian standard time is 10^h 30^m slow of Greenwich time. Honolulu local mean time is 10^h 31^m slow of Greenwich.
Pressure is corrected for temperature and reduced to sea level, and the gravity correction, -0.06, has been applied.
The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force, or amounts of cloudiness, connected by a dash, indicate change from one to the other.
The rainfall for twenty-four hours is measured at 9 a. m. local, or 7.31 p. m. Greenwich time, on the respective dates.
The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

Date.	Pressure at sea level.		Temperature.		During twenty-four hours preceding 1 p. m. Greenwich time, or 2:30 a. m. Honolulu time.								Total rainfall at 9 a. m., local time.
					Temperature.		Moisture.		Wind.		Average cloudiness.	Sea-level pressures.	
	Dry bulb.	Wet bulb.	Maximum.	Minimum.	Dew-point.	Relative humidity.	Prevailing direction.	Force.	Maximum.	Minimum.			
1.....	30.00	67	66	84	67	66.0	81	n-n.	1-0	6	30.06	29.97	0.00
2.....	29.98	69	67.7	81	66	67.7	81	sw-n.	1	6	30.06	29.97	0.00
3.....	29.95	70	69.3	81	67	68.2	83	se-n.	1	5	30.02	29.94	0.00
4.....	29.96	71	69.7	81	70	69.5	85	se-sw.	1	6	30.00	29.91	0.00
5.....	30.05	70	68	81	68	69.8	85	sw.	1	6	30.06	29.95	0.00
6.....	30.05	68	67.3	81	67	68.2	88	s-n.	1-0	2-10	30.08	30.04	1.03
7.....	29.99	67	66.8	81	67	69.0	85	e.	1-0	6	30.06	29.99	0.80
8.....	29.91	67	66.3	81	66	67.2	85	se.	1-0	6	30.02	29.92	0.07
9.....	29.90	66	65.3	79	66	67.5	86	se.	1-0	6-0	30.34	29.89	0.45
10.....	29.95	67	65.7	82	64	68.2	87	sw.	1-0	0-8	29.97	29.89	0.00
11.....	30.02	68	67	84	65	66.5	76	nne.	1	1	30.05	29.94	0.00
12.....	30.06	70	68	84	67	66.3	73	nne.	2	1-0	29.11	29.99	0.00
13.....	30.02	73	68.5	84	68	67.5	75	ne.	2	2	30.09	30.02	0.00
14.....	29.95	73	68.5	83	70	66.2	74	ne.	2	3-0	30.06	29.96	0.00
15.....	29.96	69	67	83	68	66.5	73	ne.	3-0	4-1	30.01	29.92	0.00
16.....	29.99	75	69.5	88	67	66.0	71	ne.	3-1	3	30.07	29.96	0.00
17.....	29.98	75	68.5	82	73	67.5	73	ne.	3	5	30.07	30.00	0.07
18.....	29.98	76	69.5	82	74	66.8	69	ne.	3-5	4	30.06	30.00	0.01
19.....	29.94	76	70.5	83	74	67.3	70	ene.	4	4	30.00	29.95	0.05
20.....	29.92	74	69.5	83	72	67.0	69	ne.	3-4	2-6	29.96	29.90	0.00
21.....	29.96	69	67.7	84	74	67.7	72	ne.	3	3	29.98	29.93	0.00
22.....	29.95	69	67	88	69	68.7	80	se-n.	2	3-8	30.02	29.95	0.10
23.....	29.98	73	68	82	68	67.0	76	nne.	3	3	29.96	29.88	0.00
24.....	29.94	74	68	84	67	67.7	76	se-nne.	2-0	3-7	29.96	29.86	0.09
25.....	29.98	73	68	83	67	65.8	68	ene.	2-0	5	30.02	29.94	0.07
26.....	30.00	75	68.5	84	67	65.7	67	se-ne.	2-4	3	30.05	29.99	0.00
27.....	29.98	74	68.5	88	74	65.5	64	ene.	4-2	4	30.08	29.99	0.01
28.....	29.92	71	69	84	72	66.7	70	ene.	3-0	4	30.00	29.92	0.09
29.....	29.88	71	70	81	70	68.3	82	esw.	1-0	8-3	29.95	29.88	0.37
30.....	29.91	72	70.7	81	69	70.3	84	ssw.	1-3	7	29.95	29.86	0.06
31.....	29.95	71	68.5	81	70	70.7	83	ssw.	1-0	8-2	29.99	29.93	0.27
Sums..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.23
Means.	29.965	71.1	67.6	82.3	68.8	77.0	77.1	.....	1.7	4.0	30.022	29.943	.....
Departure..	-.042	.....	+3.7	.....	.....	+6.7	.....	.....	.....	-0.4	.....	.....	.....

Mean temperature for May, 1901 (5+2+9) ÷ 3 = 74.8; normal is 74.2. Mean pressure for May, 1901 (9+3) ÷ 2 = 29.979; normal is 30.021.

*This pressure is as recorded at 1 p. m., Greenwich time. †These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡These values are the means of (5+9+2+9) ÷ 4. §Beaufort scale.

SUMMARY OF METEOROLOGICAL RECORD FOR THE MONTH OF MAY, 1901, AT HONOLULU (PUNAHOU.)

Temperature: mean for the month, 74.8°; normal, 74.2°; average daily maximum, 82.3°; average daily minimum, 68.8°; average daily range, 13.5°; greatest daily range, 19°; least daily range, 8°; highest temperature, 84°; lowest, 64°.

Barometer: average, 29.979; normal, 30.021 (corrected for gravity by -0.06); highest, 30.11; lowest, 29.86; greatest 24-hour change, 0.9. Lows passed this point on the 8th, 19th, 23d, and 29th; highs on the 5th, 11th, 17th, and 25th. There were no very marked changes in pressure.

Relative humidity: average, 79; normal, 70; mean dew

point, 67.6; normal, 64; mean absolute moisture, 7.38 grains to the cubic foot; normal, 6.53. The humidity was considerably the highest of any month of May on record for twelve years.

Rainfall: 3.23 inches; normal, 3 inches; rain-record days, 20; normal, 19; greatest rainfall in one day, 1.03 on the 6th; total at Luakaha, 13.57; at Kapiolani Park, —. Total rainfall since January 1, 21.52; normal, 17.30.

The artesian well utilized for observation at Punahou is closed for repairs; consequently there is no record for this month.

Trade wind days: 16 (3 of north-northeast); normal number of trade wind days for May, 24; average force of wind, 1.7, Beaufort scale; cloudiness, tenths of sky, 4.0; normal, 4.4.

Approximate percentage of district rainfall as compared with normal: Hilo, 40 per cent; Hamakua, 12; Kohala, 12; Waimea, 66; Kona, 210; Kau, 200; Puna, 75; Maui, north exposures, 100 per cent, southeast exposures, 200; Oahu, normal, excepting Koolaupoko, 150; Kauai, 250 per cent, excepting Hanalei, north coast, 100. The cause of the abnormal distribution of rain was the excess of southeast wind above normal, causing precipitation on the corresponding exposed side of the higher islands.

Average temperatures: Pepeekeo, Hilo district, 100 feet elevation, average maximum, 78°; average minimum, 68°; Waimea, Hawaii, 2,730 feet elevation, 77° and 64.3°; Kohala, 521 feet elevation, 82.5° and 70.3°; Kulaokahua, W. R. Castle, Oahu, 60 feet elevation, highest, 86°; lowest, 67°.

No earthquake reported this month. Snow is still visible on the summit of Mauna Kea.

There was thunder at Honolulu on the 8th and 9th.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletín Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means are now reduced to standard gravity.

Mexican data for May, 1901.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.				
Cullacan (Sin.).....	112	29.67	95.0	67.8	80.1	49	0.29	sw.	
Leon (Guajuato)....	5,906	34.21	92.1	49.5	73.9	23	0.01	nw.	w.
Linares (Nuevo Leon).	1,188	28.50	100.4	60.8	78.6	75	4.25	s.	s.
Mazatlan.....	25	29.84	83.3	65.8	75.0	75	.....	nw.	w.
Mexico (Obs. Cent.)..	7,472	22.97	86.7	47.8	67.1	49	0.63	se,sw.	ne.
Morelia (Seminario)...	6,401	28.89	85.3	50.5	68.7	55	0.70	sw.	w.
Puebla (Col. Cat.)...	7,125	23.29	83.7	48.0	69.8	56	1.96	e.	sw.
Saltillo (Col. S. Juan).	5,399	24.67	91.4	51.8	71.8	63	0.47	s.	s.
S. Isidro (Hac. de Gto)	.....	.....	82.4	65.8	.....	.....	0.08	w.	.....
San Luis Potosí.....	6,202	24.01	94.5	51.1	73.6	46	0.64	e.	w.
Toluca.....	8,812	21.91	80.6	39.2	60.8	48	1.73	w.	e.
Zapotlan (Seminario)	5,079	25.00	93.2	51.3	73.6	50	0.02	sse.	w.

*Reduced to standard temperature and gravity.

TWENTY YEARS' STUDY OF SNOW CRYSTALS.

By W. A. BENTLEY, of Nashville, Vt., April 13, 1901.

During the winter of 1884 the writer secured his first microphotographs of snow crystals; previous to this he had made some 300 drawings but found these unsatisfactory.

Photographs have been secured during every winter since